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Notes on MICROSCOPIC CRYSTALS included in some Minerals.

BY ISAAC LEA.

During some years past I have given much attention to the examination of minerals under the microscope, and some of the observations were published in the Proceedings of the Academy in 1866.

About a year since, in the examination of a thin fractured piece of a large *garnet* from North Carolina, I was surprised to observe a number of very minute acicular crystals, which generally took two or three directions. This induced me to examine more closely into the varieties of *garnets* which were accessible to me, and supposing these crystals might have been observed by others, I referred to the principal works on mineralogy which have been published in France, Germany and in this country.

In none of these have I found any mention of these inclusions. But in that excellent work "Repertoire D'Optique Moderne," by M. l'Abbé Moigno, where he treats of *optical mineralogy*, I found that he states M. Babinet to have examined "*star garnets*" (*Granats asteriques*) some with four and some with six branches. He says that the *star garnets* with four branches are not very rare, —20 to 30 in 1000 to 1200—but that the star of six rays he found only one in 6000 specimens. Whether the *filaments* or *fibers*, as M. Babinet calls the asteroid reflections, are the same as the acicular crystals observed by me I cannot say, but certainly these latter are more common so far as my observation has extended, and I have observed no asterisms whatever.

In 154 specimens of Bohemian polished *garnets*, I found 48 with acicular crystals! This far exceeds the proportion stated by M. Babinet.

In the precious garnet from Green's Creek, Delaware Co., Penn., (uncut specimens), I found in the close examination of 310 specimens that 75 were possessed of acicular crystals, being nearly 25 per cent.—a very much larger percentage than mentioned by M. Babinet. Of the Brazilian *Pyrope* I examined 40 specimens. They were very pure and free from spots and cavities. I could not find a single acicular crystal in any one of them.

In *Essonite* I found no acicular crystals in the few specimens which I had it in my power to examine, nor in *grossularite*, *ouvarovite*, *colophonite* or *massive magnesium garnet.*

Cinnamon-stone from Dixon's, near Wilmington, Del., was carefully examined in nearly 60 specimens, none of which showed any trace of acicular crystalization.

Spinelle ruby, of which I examined 28 specimens, produced no microscopic crystalized forms.

It will be difficult to ascertain what composes these microscopic crystals in garnets, but they may prove to be *rutile* when chemical analysis shall be able to resolve the difficulty.

March 2d.

The President, Dr. Hays, in the Chair.

Thirty members present.

March 9th.

The President, Dr. Hays, in the Chair.

Thirty-five members present.

The following papers were presented for publication:

Third Contribution to the Fauna of the Miocene Period of the United States. By Edw. D. Cope.

On the Cetaceans of the Western Coast of North America. By C. M. Scammon. Edited by Edw. D. Cope.

Thomas Meehan presented some hickory nuts sent by Mr. W. H Ravenel, of Aiken, South Carolina, supposed to be a hybrid between *Carya olivæformis* and *Carya aquatica*, because they were produced from trees raised from seed of the former which had trees of the latter growing near them ; and because the fruit exhibited had the characters of both. Mr. Meehan said that there was a great difference of opinion amongst botanists whether the numerous forms of hickory nuts, so puzzling to botanists who attempted to classify them, were the result of hybridization, or were produced by the plant's own innate power of change by ordinary external circumstances acting on a supposed germ of form. Exact experiments were difficult, on account of the many years it would take to get at the results. He thought this instance furnished by Mr. Ravenel useful, as being one of the nearest he had known to an actual fact that hybridization has some influence on these varying forms.

Prof. Cope exhibited a specimen of the Heloderma horridum, of Wiegmann, from Tehuantepec, belonging to the Smithsonian Institution. He stated that the Heloderma of the Sonoran region proved, on comparison, to be a different species, differing in the more numerous scales on the head and body, in the shorter tail, and in coloration. He said it had been well figured by Baird in the Mexican boundary survey. He called it H. suspectum. He stated that though the lizards of this genus could not be proven to inflict a poisonous bite, yet that the salivary glands of the lower jaw were emptied by an efferent duct which issued at the basis of each tooth, and in such a way that the saliva would be conveyed into the wound by the deep groove of the crown.

March 16th.

The President, Dr. Hays, in the Chair.

Twenty-eight members present.

March 23d.

The President, Dr. Hays, in the Chair.

Twenty-nine members present.

The death of Jason L. Fenemore was announced.

March 30th.

The President, Dr. Hays, in the Chair.

Thirty-three members present.

The Report of the Biological and Microscopical Section was read.

The following gentlemen were elected members :

Col. Jas. Greer, of Dayton, Ohio, Dr. Douglas R. Bannan, U. S. N., Geo. Henszey, John Birkinbine.

On favorable report of the Committee, the following paper was ordered to be published :